National Institute of Environmental Health Sciences

Relationships between climate and year-to-year variability in meningitis outbreaks: A case study in Burkina Faso and Niger

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Abstract:

BACKGROUND: Every year, West Africa is afflicted with Meningococcal Meningitis (MCM) disease outbreaks. Although the seasonal and spatial patterns of disease cases have been shown to be linked to climate, the mechanisms responsible for these patterns are still not well identified. RESULTS: A statistical analysis of annual incidence of MCM and climatic variables has been performed to highlight the relationships between climate and MCM for two highly afflicted countries: Niger and Burkina Faso. We found that disease resurgence in Niger and in Burkina Faso is likely to be partly controlled by the winter climate through enhanced Harmattan winds. Statistical models based only on climate indexes work well in Niger showing that 25% of the disease variance from year-to-year in this country can be explained by the winter climate but fail to represent accurately the disease dynamics in Burkina Faso. CONCLUSION: This study is an exploratory attempt to predict meningitis incidence by using only climate information. Although it points out significant statistical results it also stresses the difficulty of relating climate to interannual variability in meningitis outbreaks.

Source: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2504476

Resource Description

Communication: ☑

resource focus on research or methods on how to communicate or frame issues on climate change; surveys of attitudes, knowledge, beliefs about climate change

A focus of content

Communication Audience: ☑

audience to whom the resource is directed

Policymaker

Early Warning System: ☑

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

Exposure : ☑

weather or climate related pathway by which climate change affects health

Meteorological Factors, Meteorological Factors, Temperature

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Africa

African Region/Country: African Country

Other African Country: Burkina Faso;Niger

Health Impact:

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Airborne Disease

Airborne Disease: Meningitis

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology:

type of model used or methodology development is a focus of resource

Outcome Change Prediction

Population of Concern: A focus of content

Population of Concern:

populations at particular risk or vulnerability to climate change impacts

Low Socioeconomic Status

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content